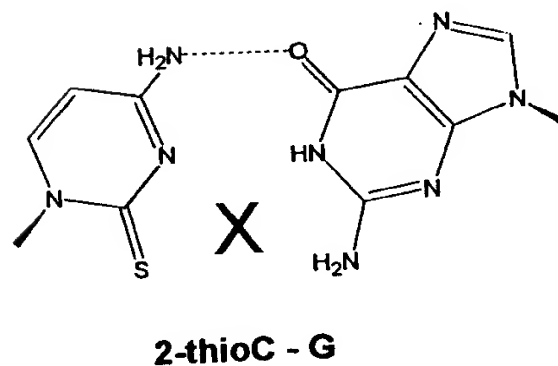
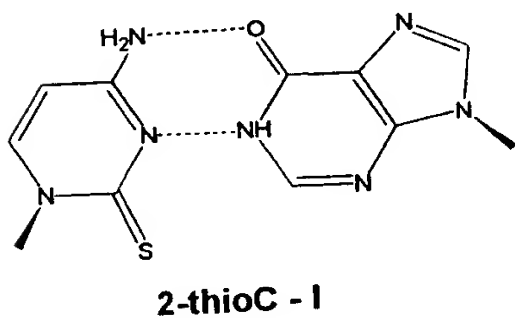
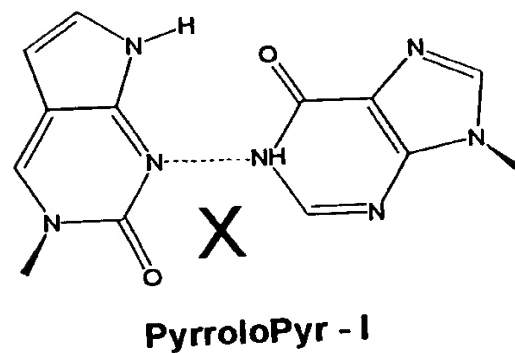
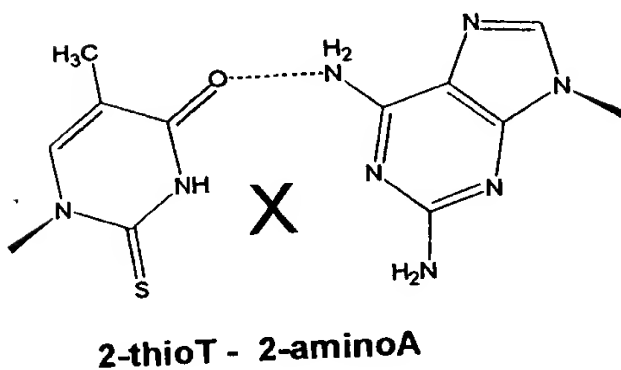
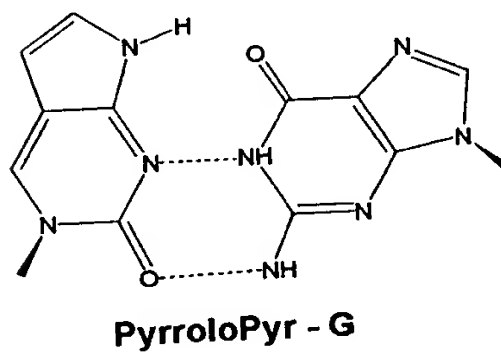
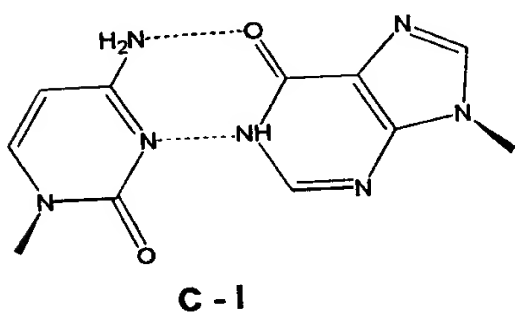
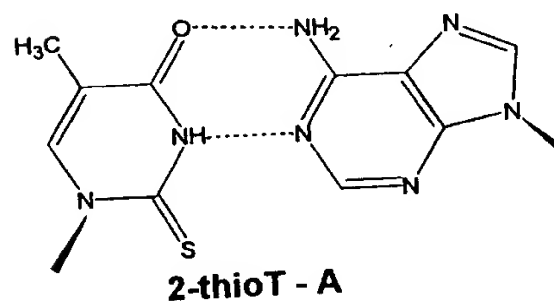
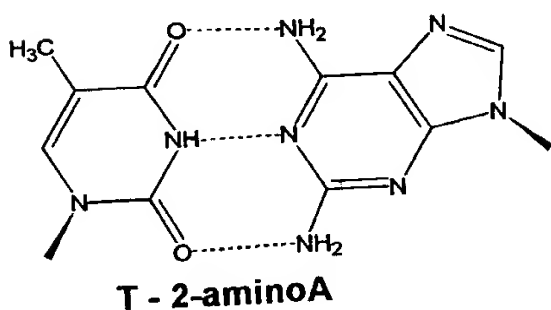
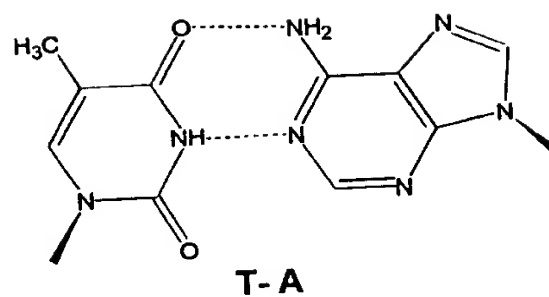
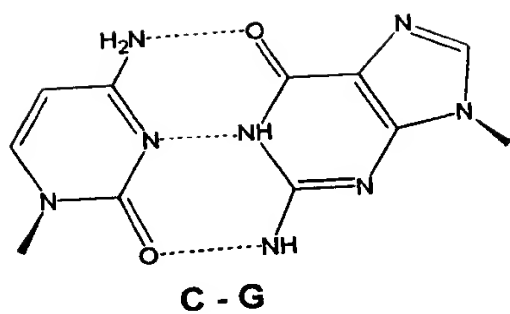


**Figure 1**



## Figure 2

A

5' -CGATAGGCTCTG →  
3' -GCTATCCGAGACCCTGACTTGACACCTGTT-5'

# B

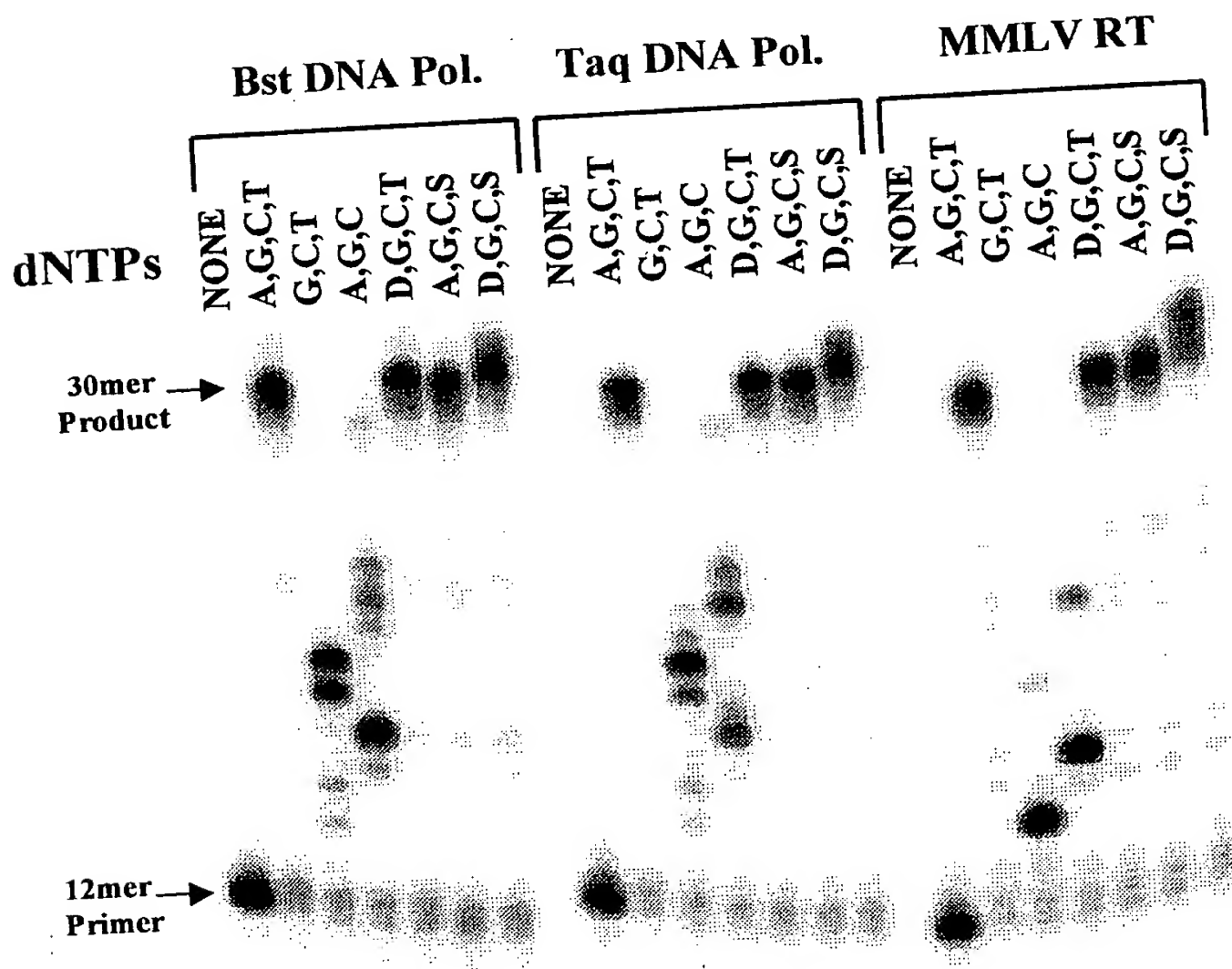
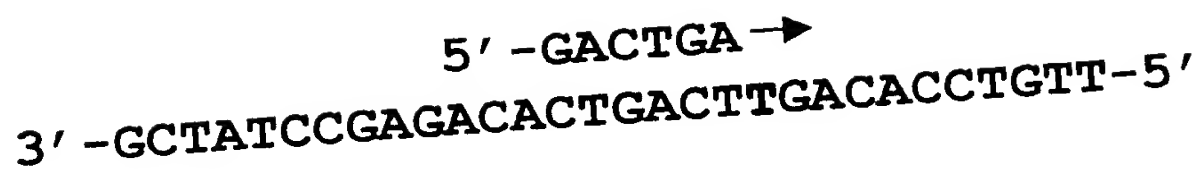


Figure 3

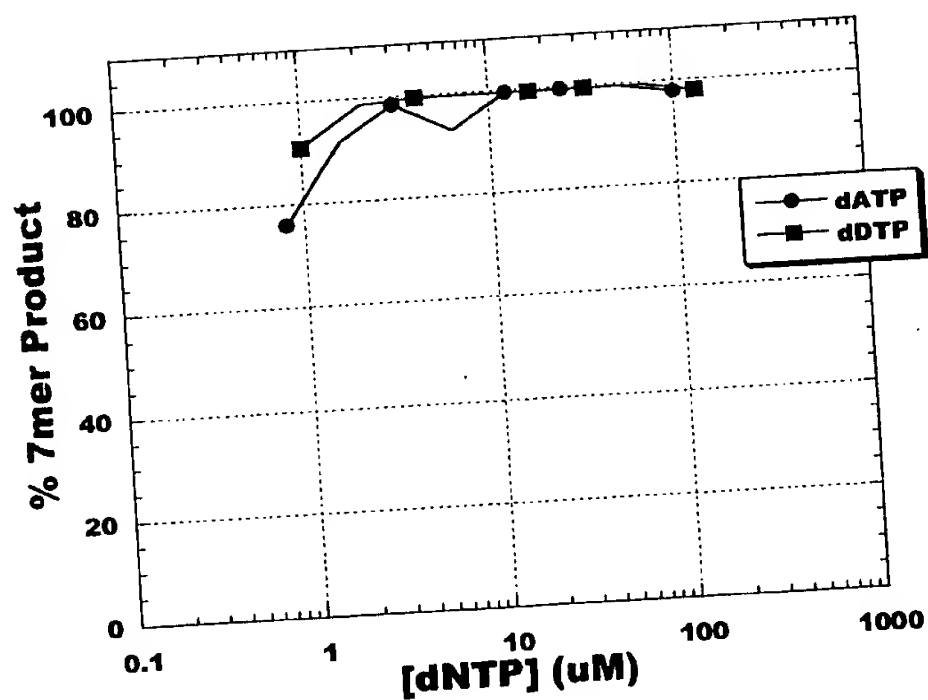
A



B

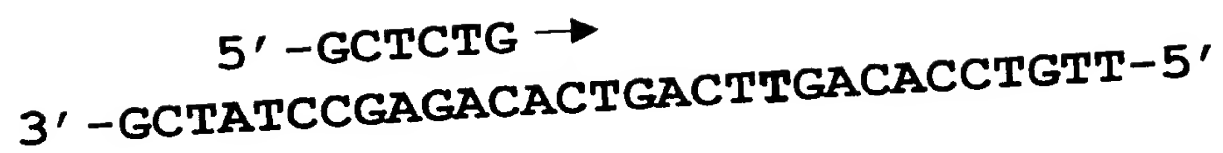


C

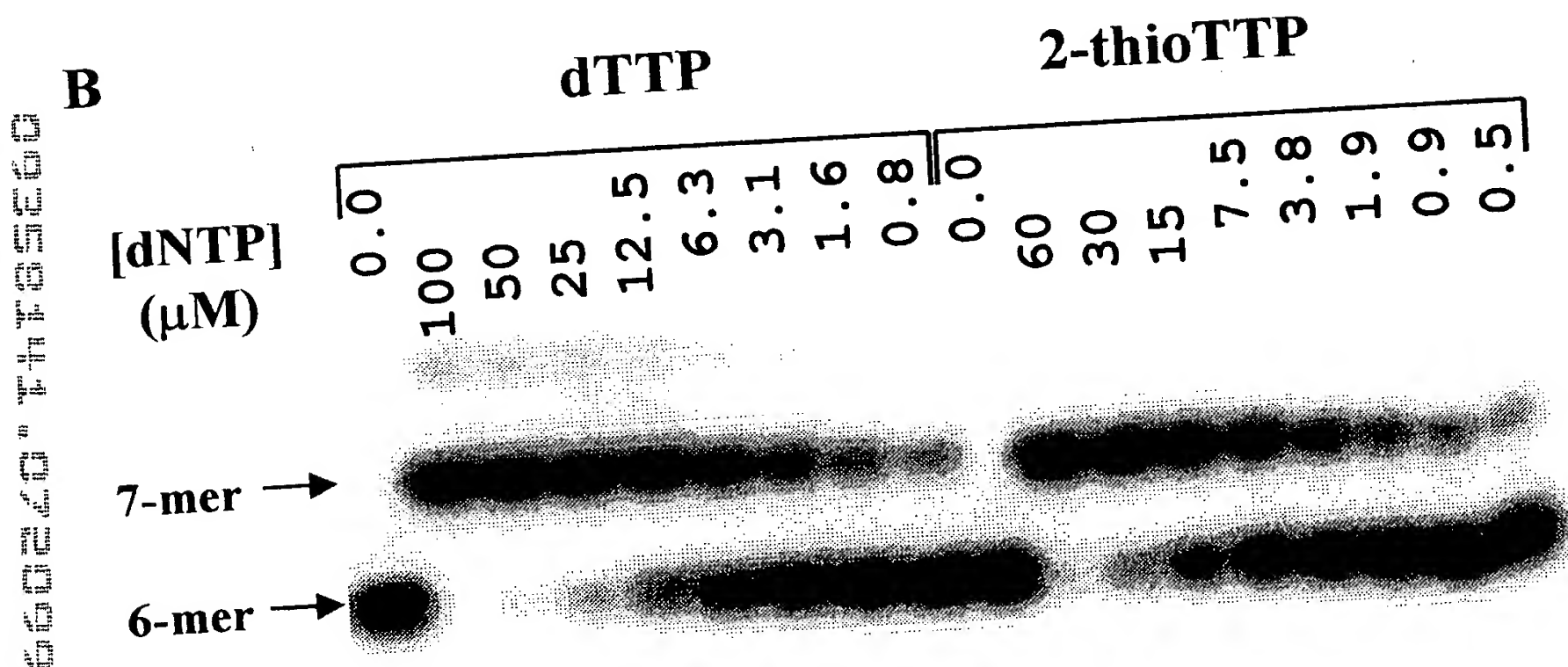


**Figure 4**

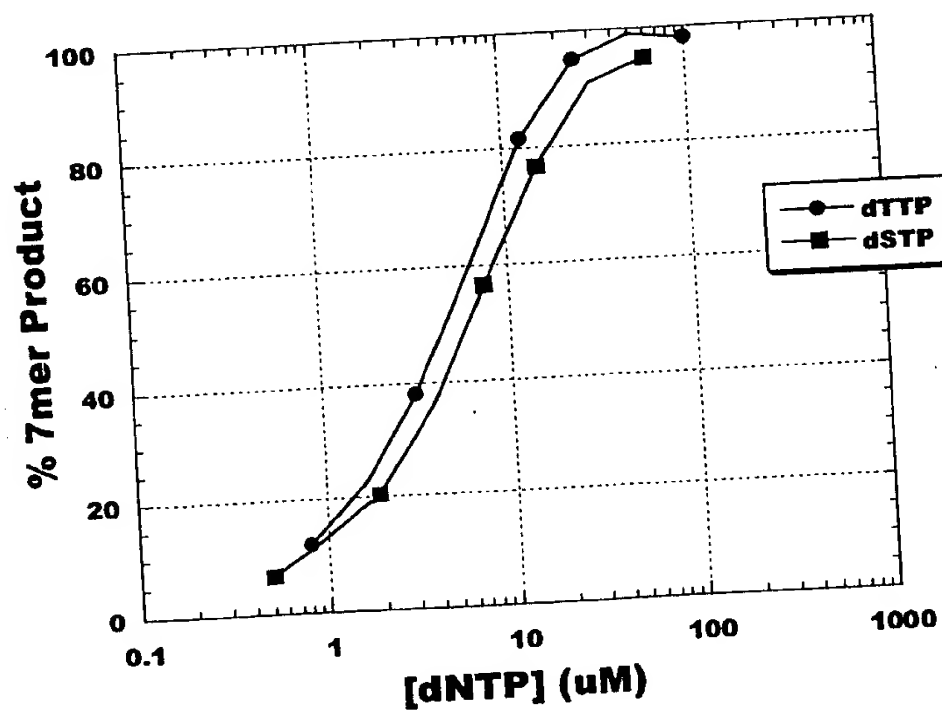
**A**



**B**

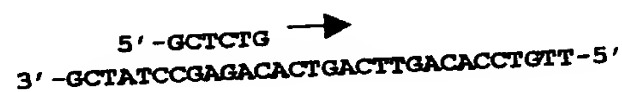
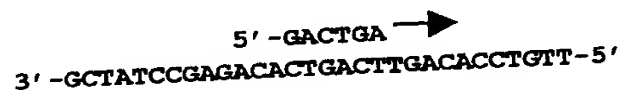


**C**



# Figure 5

**A**



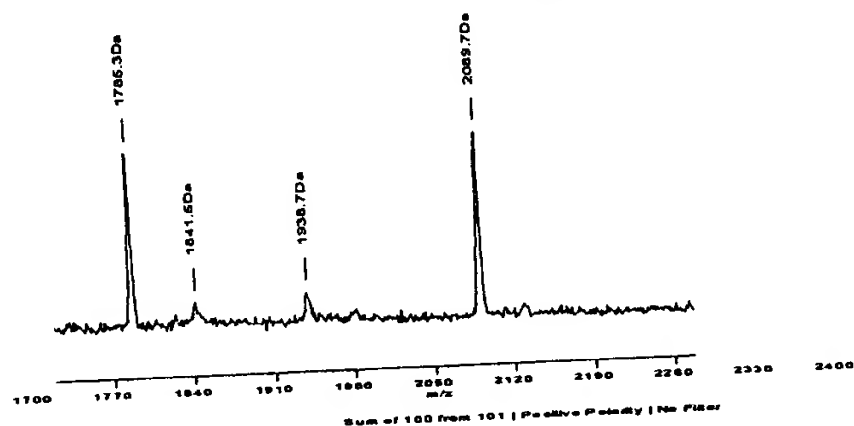
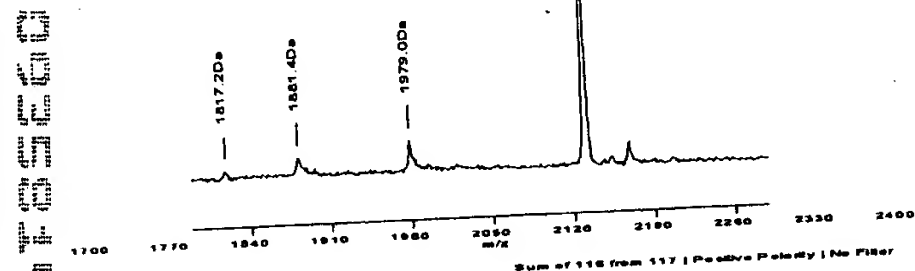
Sum of 143 from 148 | Positive Polarity | No Filter

Sum of 155 from 158 | Positive Polarity | No Filter

**B**

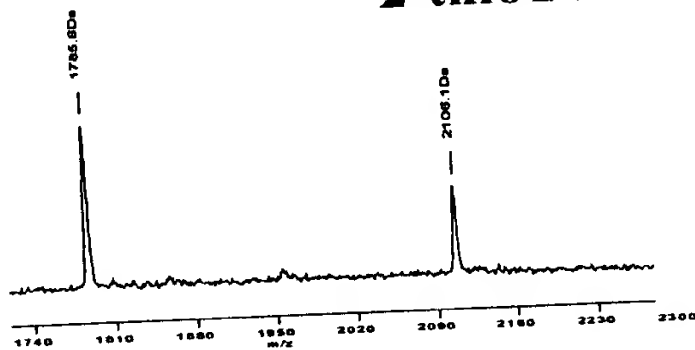
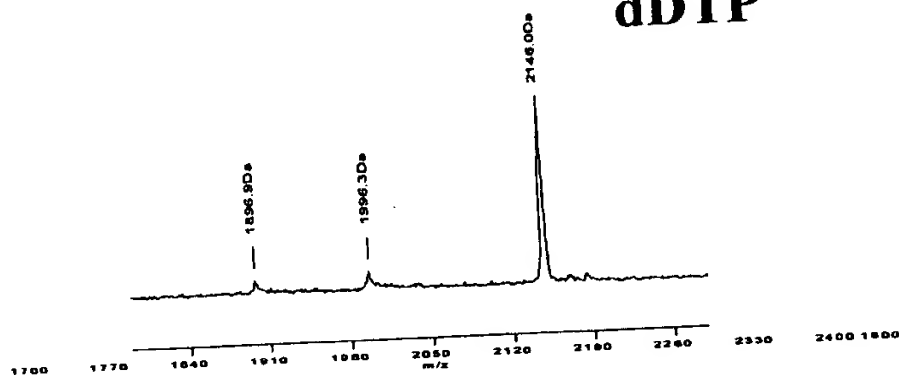
**dATP**

**dTTP**



**dDTP**

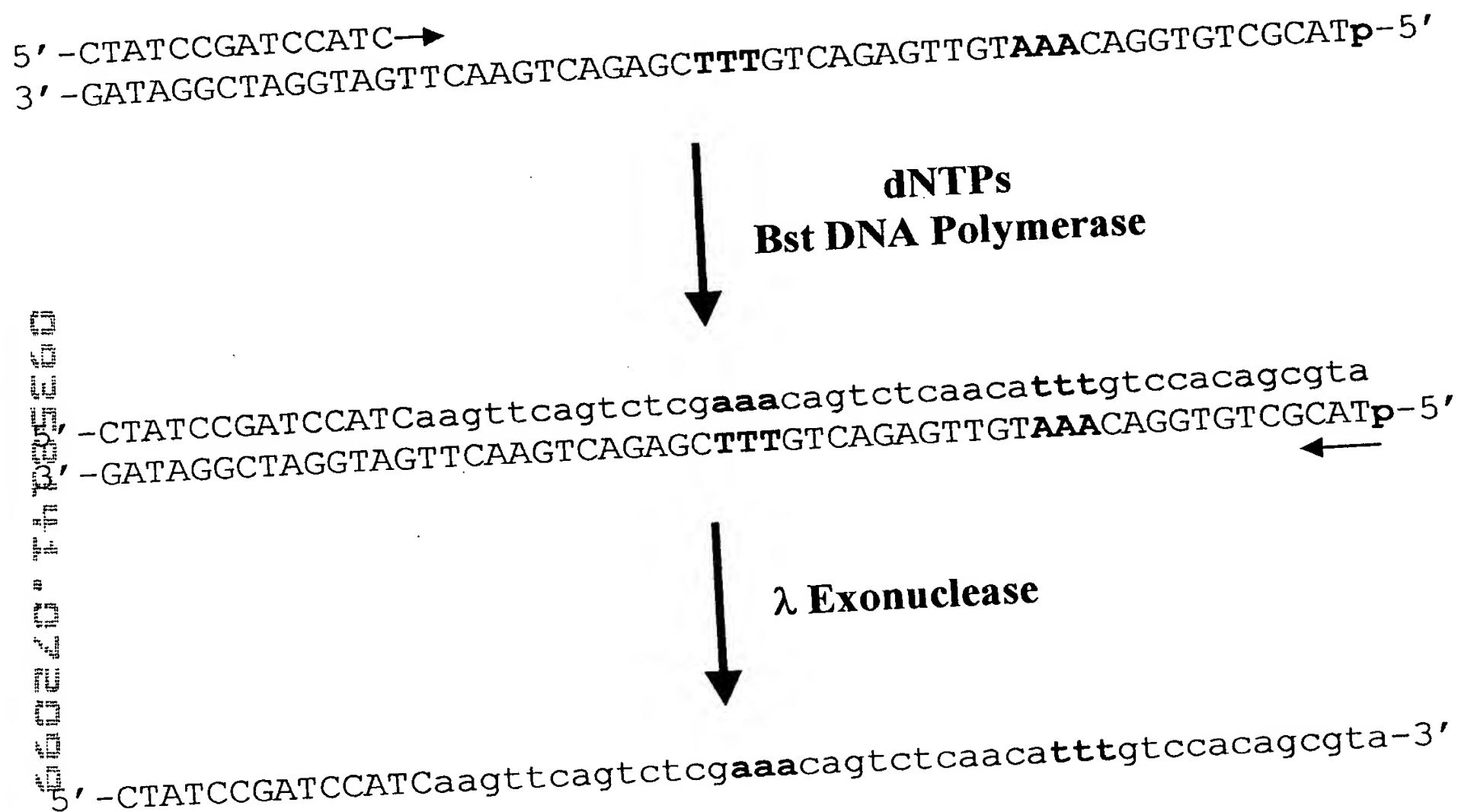
**2-thioTTP**



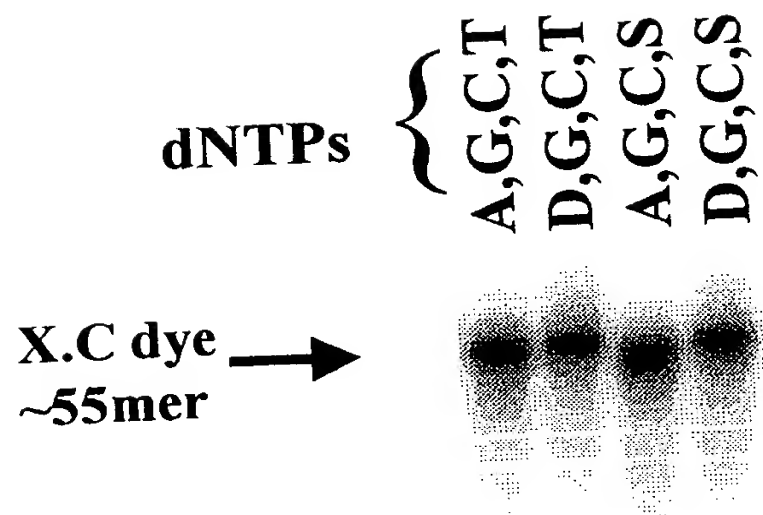
**C**

Extension Nucleotide	X-mer	Predicted m/z (Positive Ion)*	Measured m/z (Positive Ion)	Predicted Δ m/z	Measured Δ m/z
None	GACTGA	1816.3	nd	--	--
dATP	GACTGAA	2129.5	2130.2	+15.0	+15.8
dDTP	GACTGAD	2144.5	2146.0		
None	GCTCTG	1783.2	1785.4 ± 0.2	--	--
dTTP	GCTCTGT	2087.4	2089.7	+16.0	+16.4
d-2-thio-TTP	GCTCTGS	2103.4	2106.1		

Figure 6



**Figure 7**



B.P dye →  
~12mer

# Figure 8

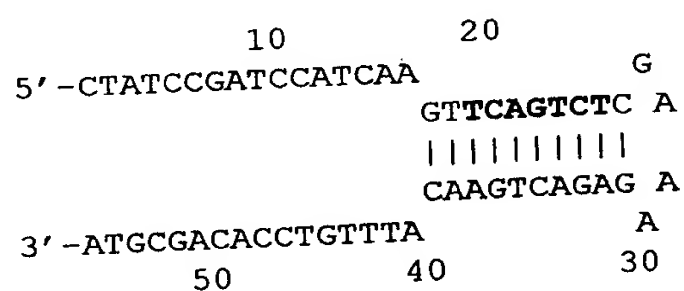
## HP21AT

$\Delta G^\circ = -12.3$  kcal/mole at 37 °C

$\Delta H^\circ = -82.5$  kcal/mole

$\Delta S^\circ = -226.3$  cal/ (°K·mol)

$T_m = 91.4^\circ\text{C}$



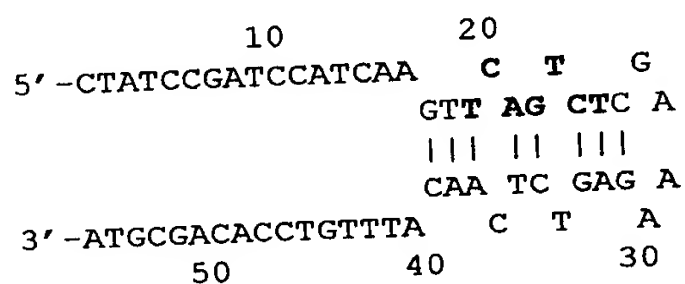
## HP26AT

$\Delta G^\circ = -3.8$  kcal/mole at 37 °C

$\Delta H^\circ = -41.2$  kcal/mole

$\Delta S^\circ = -120.5$  cal/ (°K·mol)

$T_m = 68.8^\circ\text{C}$



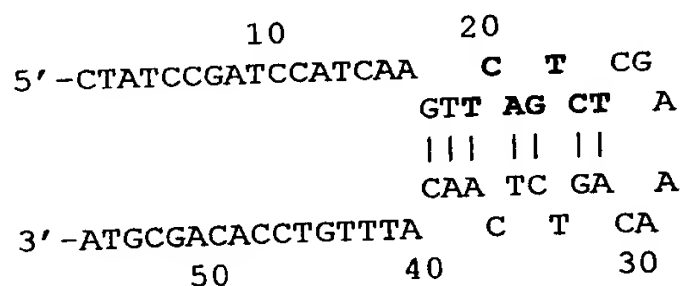
## HP28AT

$\Delta G^\circ = 0.1$  kcal/mole at 37 °C

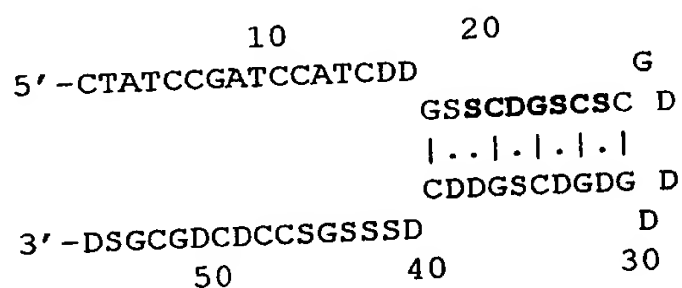
$\Delta H^\circ = -27.4$  kcal/mole

$\Delta S^\circ = -88.6$  cal/ (°K·mol)

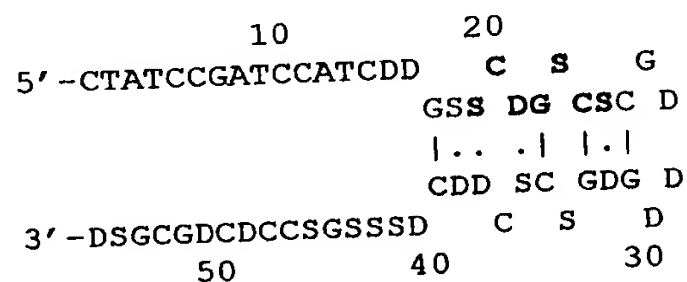
$T_m = 36.1^\circ\text{C}$



## HP21DS



## HP26DS



## HP28DS

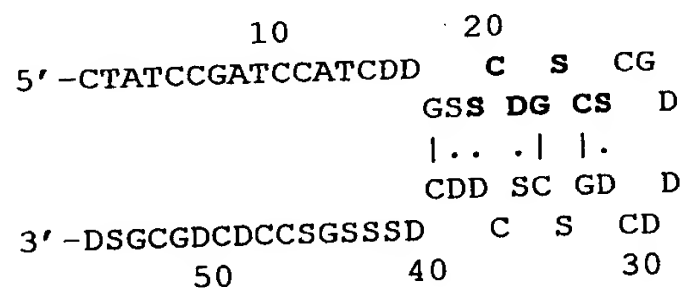
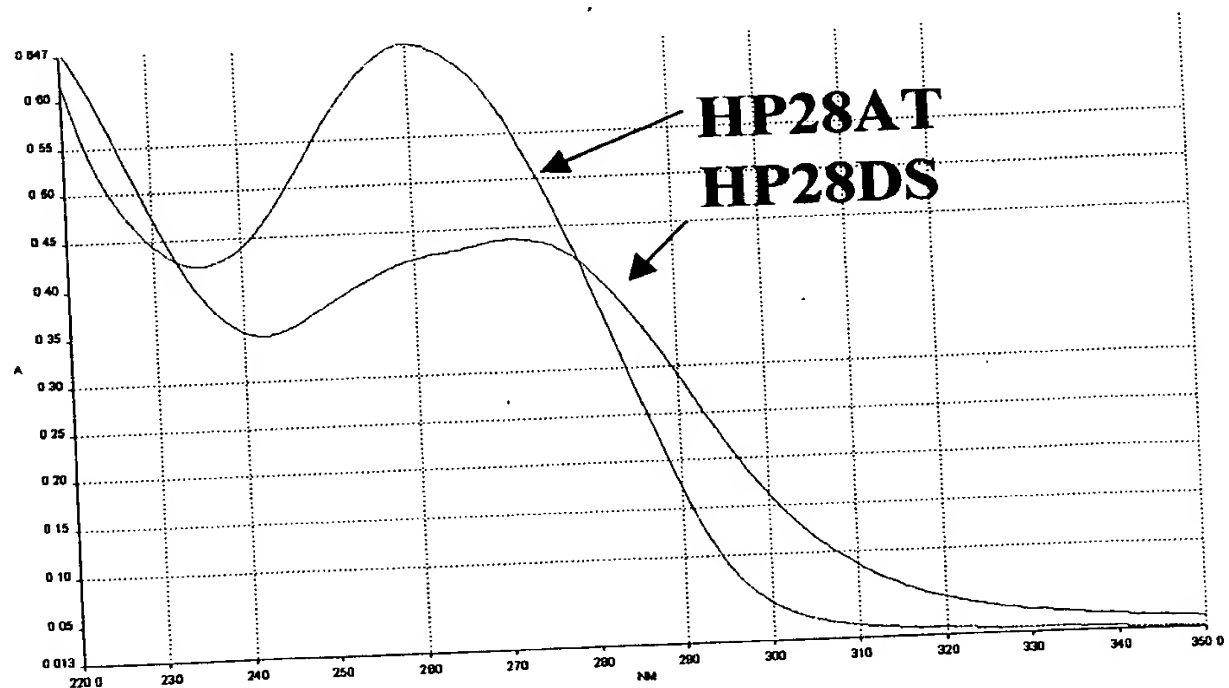
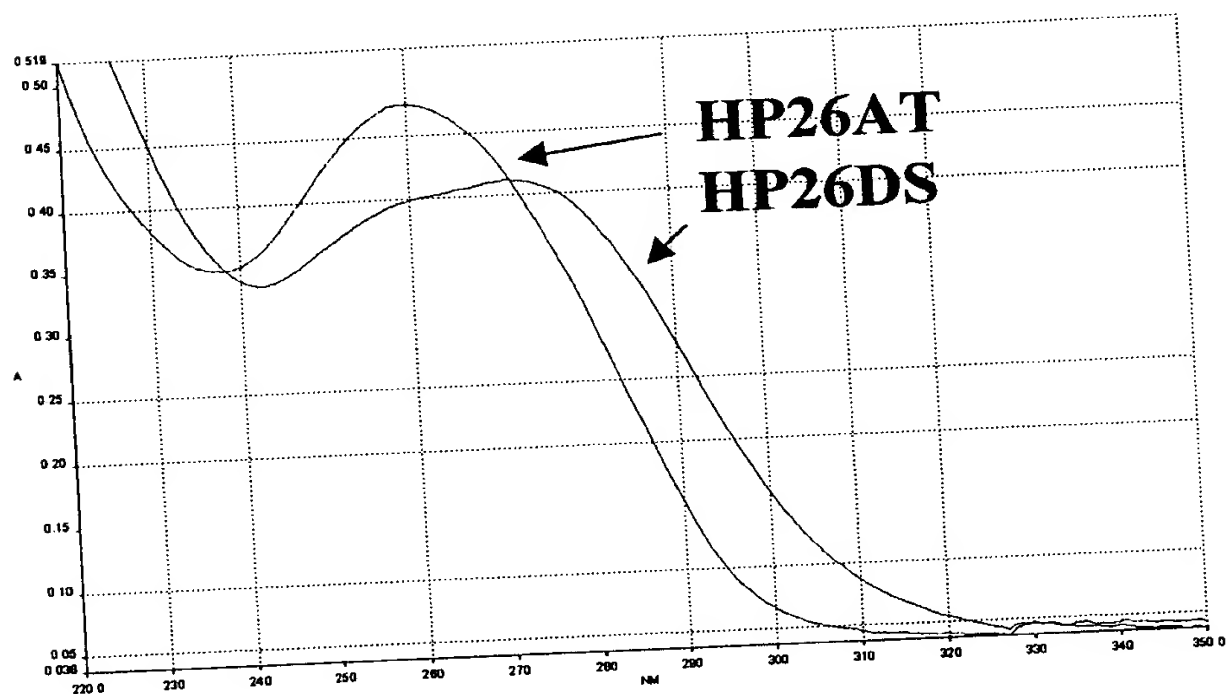
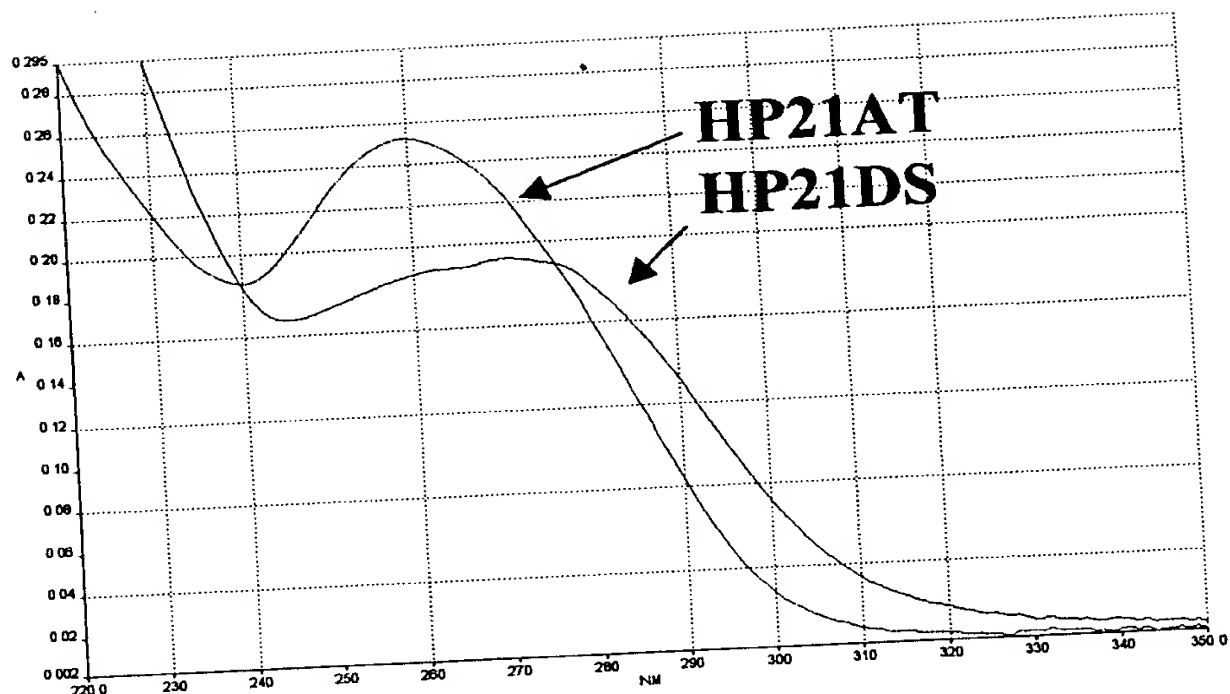


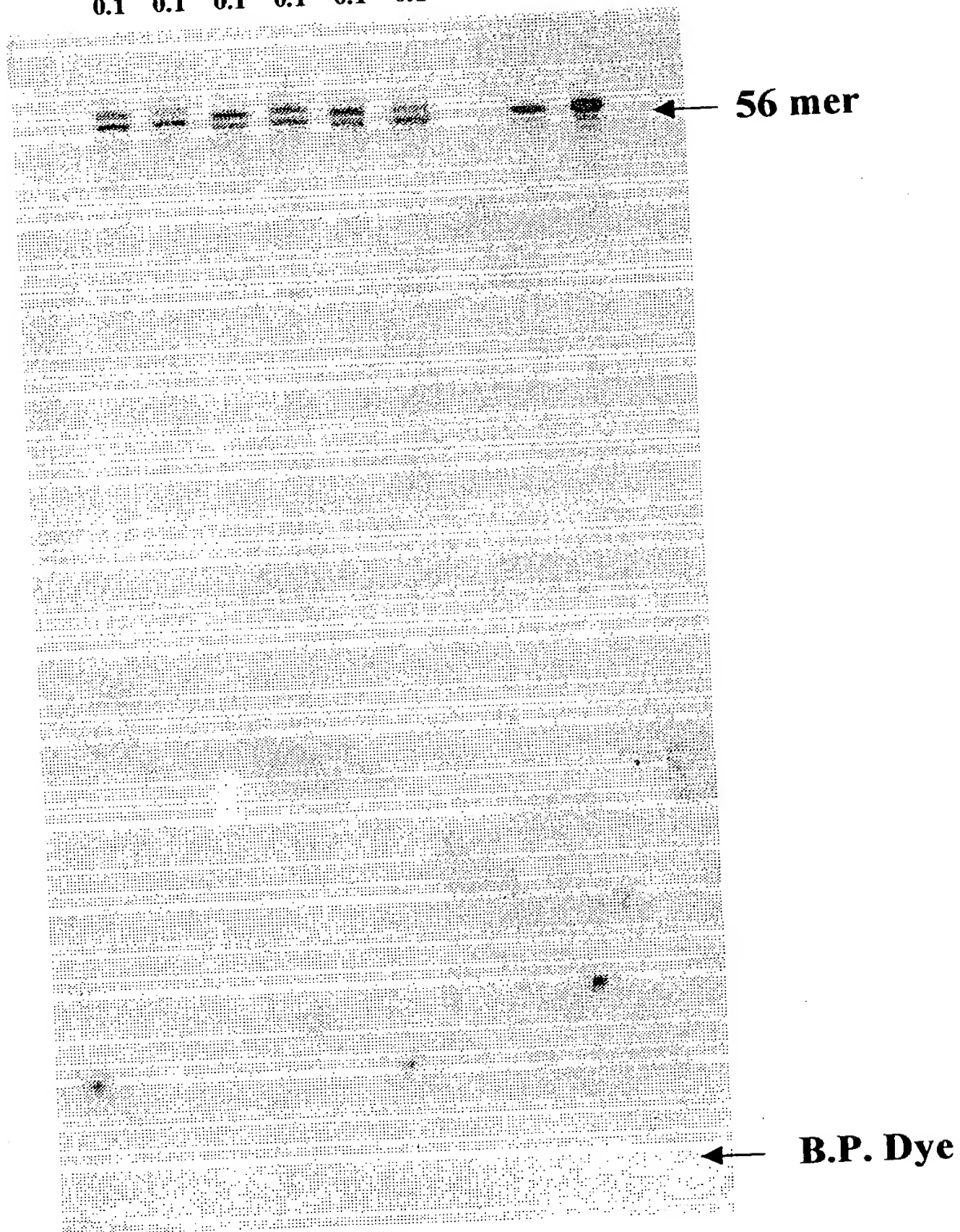


Figure 9



**Figure 10**

HP21		HP26		HP28		HP21	
A	T	D	S	A	T	D	S
Template DNA		Template DNA		Template DNA		Template DNA	
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2 (ug)



**10% 7M Urea PAGE**

66020" 44 183660

# Figure 11

HP21  
Target

← AGTCAGA 7mer-2169  
 ← GTCAGA 6mer-543  
 |||||  
 5'-CTATCCGATCCATCAAGTTCAGTCTCGAAAGAGACTGAACATTTGTCCACAGCGTA-3'  
 ← CAGGTG 6mer-2978  
 |||||

HP26  
Target

← AGTCAGA 7mer-2169  
 ← GTCAGA 6mer-543  
 |||||  
 5'-CTATCCGATCCATCAAGTTCAGTCTCGAAAGAGTCTCAACATTTGTCCACAGCGTA-3'  
 ← CAGGTG 6mer-2978  
 |||||

HP28  
Target

← AGTCAGA 7mer-2169  
 ← GTCAGA 6mer-543  
 |||||  
 5'-CTATCCGATCCATCAAGTTCAGTCTCGAAACAGTCTCAACATTTGTCCACAGCGTA-3'  
 ← CAGGTG 6mer-2978  
 |||||

TarZT  
Target

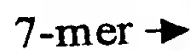
6mer-2978 ← CAGGTC ← AGTCAGA 7mer-2169  
 ||||| ||||| ← GTCAGA 6mer-543  
 5'-TTGTCCACAGTTCAGTCTCAGAGCCTATCG-3'

66020" 743860

6-mer 543



7-mer 2169

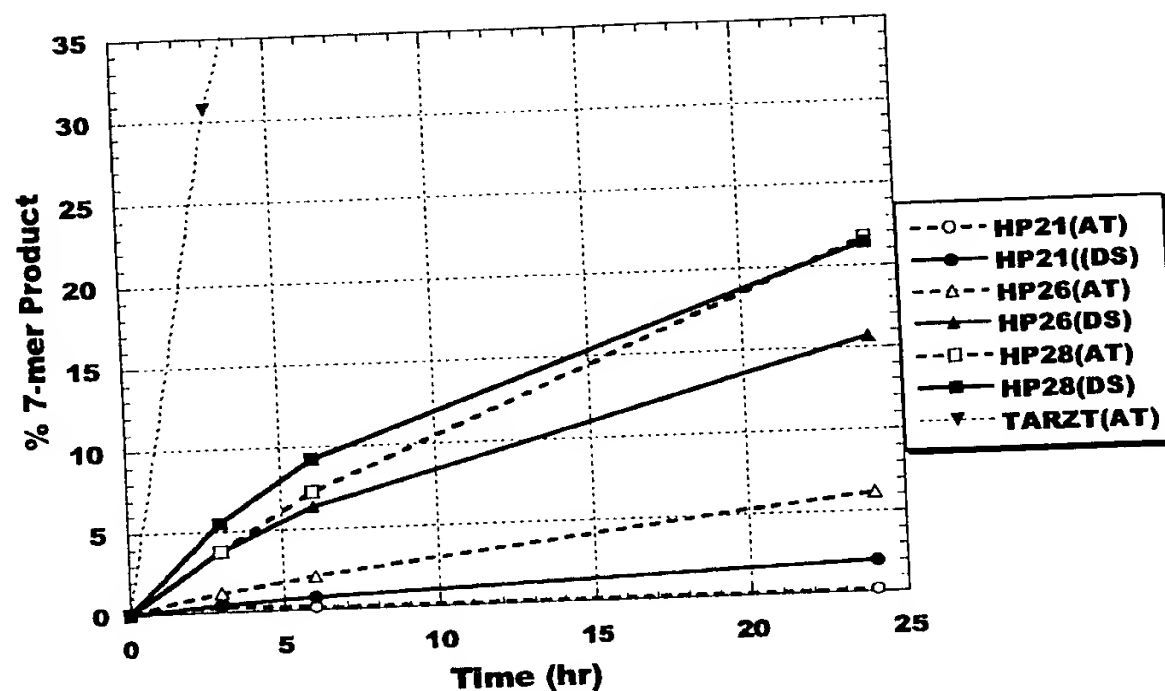


6-mer 2978

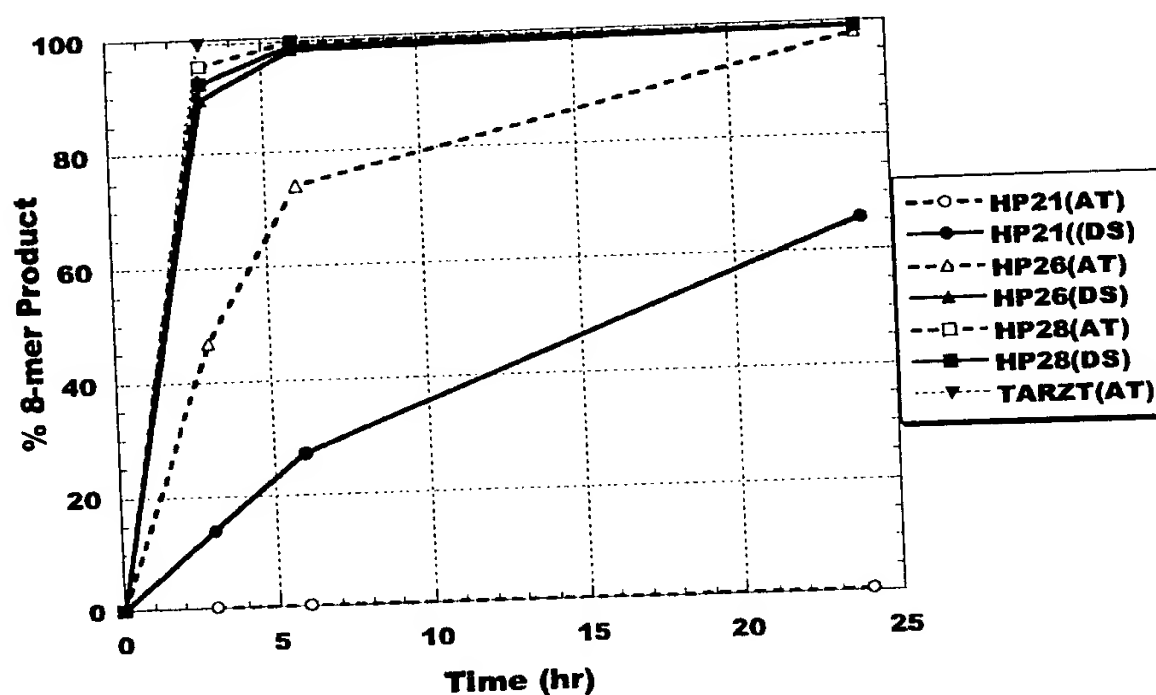


Figure 13

6mer-543



7mer-2169



6mer-2978

